



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/475,563	12/30/1999	DAVID P. WILLIAMS	RA-5281	6509
27516	7590	02/10/2005	EXAMINER	
			WOOD, WILLIAM H	
			ART UNIT	PAPER NUMBER
			2124	

DATE MAILED: 02/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/475,563	WILLIAMS, DAVID P.	
	Examiner	Art Unit	
	William H. Wood	2124	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 15 November 2004.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 19-22 is/are allowed.
- 6) Claim(s) 1-18 and 23-36 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

Claims 1-36 are pending and have been examined.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 15 November 2004 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-6 and 35-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Mann** (USPN 5,978,902) in view of **Ryan et al.** (USPN 6,530,076) in further view of **Bryant et al.** (USPN 6,728,949).

Claim 1

Mann disclosed a method for selectively collecting information from a plurality of logical segments in a computing environment (column 1, lines 11-15; column 10, lines 15-67), the method comprising:

- ◆ controllably designating at least one of a plurality of data collection periods defined by events occurring within designated portions of the computing environment, each of the plurality of data collection periods defining a respective temporal window in which storage of the designated set of information is enabled (column 22, lines 33-35); and
- ◆ storing the designated set of information identified by the designated information storage mode only during the temporal window corresponding to the designated data collection period (column 22, lines 33-35)

Mann did not explicitly state *controllably designating one of a plurality of information storage modes, wherein each of the information storage modes identifies a different set of information from the plurality of logical segments to be stored.* **Ryan** demonstrated that it was known at the time of invention to selectively trace various processor signals (column 6, line 66 to column 7, line 2; column 9, lines 16-18, lines 63-65; Figure 9; mode is a function of what is to be traced). It would have been obvious to one of ordinary skill in the art at the time of invention to implement **Mann's** configurable tracing processor with selectively tracing various signals and conditionally storing traced information as found in **Ryan's** teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to record only required

Art Unit: 2124

signals to save processor work and memory space (**Ryan**: column 1, lines 40-52; column 2, lines 40-46).

Mann did not explicitly state *identifies one or more conditions occurring in the computing environment under which the designated set of information will be stored.*

Bryant demonstrated that it was known at the time of invention to trace or gather information based upon selectable qualifying conditions (column 2, line 64 to column 3, line 16). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the customizable tracing processor of **Mann** and **Ryan** with selectable tracing conditions as found in **Bryant**'s teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to reduce system perturbation and obtain a more focused picture of actually useful data (column 2, lines 45-61).

In regard to claim 2, **Mann** and **Ryan** further disclosed the limitation *further comprising controllably designating an information retrieval mode, wherein retrieval of the stored set of information is enabled in response thereto* (**Mann**: column 31, lines 48-50 and 53-57).

In regard to claim 3, **Mann** and **Ryan** further disclosed the limitation *wherein controllably designating an information retrieval mode comprises substituting the designation of the*

information storage mode with the designation of the information retrieval mode (Mann: column 31, lines 48-50 and 53-57).

In regard to claim 4, Mann and Ryan further disclosed the limitation *wherein controllably designating at least one of a plurality of data collection periods comprises controllably designating a data collection commencement event, wherein the data collection period commences upon recognition of at least one of the events occurring within the designated portions of the computing environment* (Mann: column 22, lines 33-35).

In regard to claim 5, Mann and Ryan further disclosed the limitation *wherein controllably designating at least one of a plurality of data collection periods comprises controllably designating a data collection termination event, wherein the data collection period terminates upon recognition of at least one of the events occurring within the designated portions of the computing environment* (Mann: column 22, lines 33-35).

In regard to claim 6, Mann and Ryan further disclosed the limitation *further comprising dynamically reconfiguring the information storage modes to designate a different set of information from a different one of the plurality of logical segments to be stored* (Ryan: column 2, lines 40-46).

Claim 35

Mann, Ryan, and Bryant disclosed the method of Claim 1, further comprising controllably designating at least one of the plurality of data collection periods based on a commencement event independent of the events occurring within designated portions of the computing environment (**Mann**: column 22, lines 33-35; starting and stopping not dependent upon each other or other starting and stop locations).

Claim 36

Mann, Ryan, and Bryant disclosed the method of Claim 1, further comprising controllably designating at least one of the plurality of data collection periods based on a termination event independent of the events occurring within designated portions of the computing environment (**Mann**: column 22, lines 33-35; starting and stopping not dependent upon each other or other starting and stopping locations).

4. Claims 7-18 and 23-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mann (USPN 5,978,902) in view of Ryan et al. (USPN 6,530,076) in view of **Bryant** et al. (USPN 6,728,949) and in further view of Torrey et al. (USPN 6,145,123).

In regard to claim 7, Mann and Ryan did not explicitly state the limitation *further comprising dynamically reconfiguring the data collection periods to designate a different temporal window in which storage of the designated set of information is enabled.*

Torrey demonstrated that it was known at the time of invention to dynamically designate windows of trace capture (Torrey: column 6, lines 55-65; column 7, lines 46-67; instructions for accessing breakpoint registers allow for dynamic reconfiguration; also Figure 4). It would have been obvious to one of ordinary skill in the art at the time of invention to implement Mann and Ryan's tracing system with dynamic reconfiguration of tracing window as found in Torrey's teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to by the fact that Torrey is discussing a similar tracing processing system as Mann and both are using breakpoint registers (Mann: column 33-35; Torrey: column 6, line 56 to column 7, line 45) and both have a ITCR register (Torrey: column 9, lines 31-35).

Claim 8

Claim is rejected in the same manner as claims 4, 5 and 7 above.

Claim 9

Claim limitations correspond to claim 8, therefore rejection of claims 1, 4, 5, 7 and 8 is incorporated herein.

In regard to claim 10, Mann, Ryan, Bryant and Torrey disclosed the limitations corresponding to claim 9 (claim 9 rejection incorporated herein). Ryan and Torrey did not explicitly state the limitation *wherein the dynamically-configurable write mode selection module comprises a write mode scan register that is loaded via a dynamic*

scan operation. Torrey demonstrated that it was known at the time of invention to utilize scan registers for information (column 9, lines 31-35). It would have been obvious to one of ordinary skill in the art at the time of invention to implement Mann, Ryan and Torrey's registers as scan registers as found in Torrey's teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to use a common method of register implementation.

In regard to claim 11, Mann, Ryan, Bryant and Torrey disclosed the limitations corresponding to claim 9 (claim 9 rejection incorporated herein). Mann, Ryan and Torrey further disclosed the additional limitation *wherein the dynamically-configurable timing control module comprises a timing control scan register that is loaded via a dynamic scan operation* (Torrey: column 6, line 56 to column 7, line 67; column 9, lines 31-35; Mann: column 10, lines 15-67; ITCR register and D0-7 registers).

In regard to claim 12, Mann, Ryan, Bryant and Torrey disclosed the limitations corresponding to claim 9 (claim 9 rejection incorporated herein). Mann, Ryan and Torrey further disclosed the additional limitation *wherein the dynamically-configurable write mode selection module further comprises means for enabling the selected subset of the operational information to be stored in the memory if the subset of operational information changes from a first defined time to a second defined time, in response to a corresponding write mode selection identifier* (Ryan: column 2, lines 40-46).

In regard to claim 13, Mann, Ryan, Bryant and Torrey disclosed the limitations corresponding to claim 9 (claim 9 rejection incorporated herein). Mann, Ryan and Torrey further disclosed the additional limitation *wherein the dynamically-configurable write mode selection module further comprises means for enabling the selected subset of the operational information to be stored in the memory, if a current function value within the selected subset of operational information matches a predetermined function value, and if a current address value within the selected subset of operational information matches a predetermined address value, in response to a corresponding write mode selection identifier* (Mann: column 10, lines 15-67; Torrey: column 31-35).

In regard to claim 14, Mann, Ryan, Bryant and Torrey disclosed the limitations corresponding to claim 9 (claim 9 rejection incorporated herein). Mann, Ryan and Torrey further disclosed the additional limitation *wherein the dynamically-configurable write mode selection module further comprises means for enabling the selected subset of the operational information to be stored in the memory if the subset of operational information is received from a predetermined one or more of the functional modules* (Ryan: column 9, lines 16-18).

In regard to claim 15, Mann, Ryan, Bryant and Torrey disclosed the limitations corresponding to claim 9 (claim 9 rejection incorporated herein). Mann, Ryan and Torrey further disclosed the additional limitation *wherein the dynamically-configurable timing control module comprises a dynamically-scannable register coupled to the*

control interface to receive and store the collection initiation identifiers and the collection termination identifiers, wherein the dynamically-scannable register includes a plurality of outputs to provide capture enable/disable signals to enable storing of the selected subset of operational information into the memory upon activation of an initiation event corresponding to the collection initiation identifier, and to terminate storing of the selected subset of operational information into the memory upon activation of a termination event corresponding to the collection termination identifier (Mann: column 19, lines 20-50).

In regard to claim 16, Mann, Ryan, Bryant and Torrey further disclosed the limitations:

- ♦ *a data interface coupled to receive the operational information from the functional modules* (Ryan: Figure 9, elements 59 and 216); and
- ♦ *a multiplexing module coupled to the data interface to exclude the operational information external to the selected subset of operational information identified by the selectable write mode identifiers* (Ryan: Figure 9, elements 59, 208, 216 and 218).

In regard to claim 17, Mann, Ryan, Bryant and Torrey did not explicitly state *further comprising a write data register coupled to the multiplexing module to receive and store the selected subset of operational information*. Official Notice is taken that it was known at the time of invention to utilize registers for storing or latching information or data. It would have been obvious to one of ordinary skill in the art at the time of invention to

implement Ryan and Torrey's system of capturing trace data with a register for storing information going from Ryan's multiplexor to the Trace Ram (Figure 9). This implementation would have been obvious because one of ordinary skill in the art would be motivated by using some common easy to implement mechanism (a register latch) for bus 218.

In regard to claim 18, Mann, Ryan, Bryant and Torrey further disclosed the limitation *further comprising a dynamically configurable read mode selection module coupled to the control interface to receive a selectable read mode identifier, and to enable the selected subset of operational information stored in the memory to be accessed* (Mann: column 31, lines 48-57; Torrey: column 9, lines 31-35).

In regard to claim 23, Mann, Ryan, Bryant and Torrey disclosed the limitations corresponding to claim 9 (claim 9 rejection incorporated herein). Ryan and Torrey disclosed the limitation *wherein the computing environment is an integrated circuit, and wherein at least one of the plurality of functional modules are predetermined logical sections of the integrated circuit* (Ryan: column 9, lines 16-18).

In regard to claim 24, Mann, Ryan, Bryant and Torrey further disclosed the limitation *wherein at least one of the plurality of functional modules are external to the integrated circuit* (Mann: column 7, lines 40-43).

In regard to claim 25, Mann, Ryan, Bryant and Torrey disclosed the limitations:

- ◆ *A method for selectively collecting information from a plurality of functional modules in a computing environment, the method comprising:*
 - ◆ *designating one of n plurality of information storage modes, wherein each of the information storage modes identifies a different set of information from the plurality of functional modules to be stored;*
 - ◆ *designating one of a plurality of storage commencement events, wherein each of the storage commencement events identifies a different triggering event to enable storage of the designated set of information to begin;*
 - ◆ *designating one of a plurality of storage termination events, wherein each of the storage termination events identifies a different triggering event to discontinue storage of the designated set of information;*
 - ◆ *monitoring for activation of the designated storage commencement event;*
 - ◆ *enabling storage of the designated set of information, as governed by the designated information storage mode, upon recognition of the activation of the designated storage commencement event;*
 - ◆ *monitoring for activation of the designated storage termination event; and*
 - ◆ *disabling storage of the designated set of information upon recognition of the activation of the designated storage termination event.*

Claim limitations correspond to claim 8, therefore rejection of claims 1, 4, 5, 7 and 8 is incorporated herein.

In regard to claim 26, Mann, Ryan, Bryant and Torrey further disclosed the limitation *wherein enabling storage of the designated set of information comprises storing the designated set of information in a memory, and wherein the method further comprises retrieving the set of information stored in the memory* (Mann: column 31, lines 48-50 and 53-57; Ryan: column 2, lines 40-46).

In regard to claim 27, Mann, Ryan, Bryant and Torrey further disclosed the limitation *further comprising reconfiguring the designated information storage mode to designate an information retrieval mode, and wherein retrieving the set of information comprises retrieving the set of information from the memory in response to the designation of the information retrieval mode* (Mann: column 31, lines 48-50 and 53-57; Ryan: column 2, lines 40-46).

In regard to claim 28, Mann, Ryan, Bryant and Torrey further disclosed the limitation *wherein reconfiguring the designated information storage mode comprises dynamically scanning a retrieval mode identification into a scan register to designate the information retrieval mode* (Mann: column 31, lines 48-57).

In regard to claim 29, Mann, Ryan, Bryant and Torrey further disclosed the limitation further comprising *reconfiguring the designated information storage mode to designate another one of the plurality of information storage modes* (Ryan: column 2, lines 40-46).

In regard to claim 30, Mann, Ryan, Bryant and Torrey disclosed the limitations corresponding to claims 25 and 29 (claims 25 and 29 rejection incorporated herein). Mann, Ryan and Torrey did not explicitly state the limitation *wherein reconfiguring the designated information storage mode comprises dynamically scanning a storage mode identification into a scan register to designate the information storage mode.* Torrey demonstrated that it was known at the time of invention to utilize scan registers for information (column 9, lines 31-35). It would have been obvious to one of ordinary skill in the art at the time of invention to implement Mann, Ryan and Torrey's registers as scan registers as found in Torrey's teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to use a common method of register implementation.

In regard to claim 31, Mann, Ryan, Bryant and Torrey further disclosed the limitation *further comprising reconfiguring the designated storage commencement event to designate another one of the plurality of storage commencement events* (Torrey: column 6, line 56 to column 7, line 67).

In regard to claim 32, Mann, Ryan, Bryant and Torrey did not explicitly state *wherein reconfiguring the designated storage commencement event comprises dynamically scanning a storage commencement identification into a scan register to designate the storage commencement event.* Torrey demonstrated that it was known at the time of

invention to utilize scan registers for information (column 9, lines 31-35). It would have been obvious to one of ordinary skill in the art at the time of invention to implement Mann, Ryan and Torrey's registers as scan registers as found in Torrey's teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to use a common method of register implementation.

In regard to claim 33, Mann, Ryan, Bryant and Torrey further disclosed the limitation *further comprising reconfiguring the designated storage termination event to designate another one of the plurality of storage termination events* (Torrey: column 6, line 56 to column 7, line 67).

In regard to claim 34, Mann, Ryan, Bryant and Torrey did not explicitly state wherein reconfiguring the designated storage termination event comprises dynamically scanning a storage termination identification into a scan register to designate the storage termination event. Torrey demonstrated that it was known at the time of invention to utilize scan registers for information (column 9, lines 31-35). It would have been obvious to one of ordinary skill in the art at the time of invention to implement Mann, Ryan and Torrey's registers as scan registers as found in Torrey's teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to use a common method of register implementation.

Response to Arguments

5. Applicant's arguments filed 15 November 2004 have been fully considered but they are not persuasive. Applicant argued: 1) **Mann** does not disclose defining a temporal data collection window based upon events occurring within the system (page 18, bottom; and page 20, top); 2) **Mann** generates an external signal, which fails to define a collection period (page 19, top); and 3) **Ryan** fails to disclose modes defining a different set of recorded information from logical segments (page 22, top).

First, the temporal window is defined by the start and stop registers in that they define the events (addresses being reached) in which tracing (recording of information) is to occur.

Second, the passage cited by Applicant does not pertain to the temporal window based upon address registers provided in the previous office action. However, it does illustrate another example of events (in this case signals pertaining to tracing commands being set) that define a temporal window in which information can be collected. Enabling data collection periods based upon events in the computing system is sufficiently broad to read upon the cited prior art in many ways.

Third, selectively different signals being traced (provided by **Ryan**) is most certainly read upon by the broadest reasonable interpretation of "identify a different set of information ... to be stored".

Previous rejections under 35 U.S.C. § 112 are withdrawn. All other claims being related in limitation are considered rejected as stated above and argued above. Having addressed all of Applicant's raised issues, the rejections are maintained.

Art Unit: 2124

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William H. Wood whose telephone number is (571)-272-3736. The examiner can normally be reached 9:00am - 5:30pm Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (571)-272-3719. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9306 for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.



William H. Wood
February 4, 2005



KAKALI CHAKI
ISORY PAT EXAMINER
TECHNOLOGY CENTER 2100